

We claim:

1. A system for interactive transfer of inventory information in a product storage space, said system comprising:
a directing station, a base station and a portable station;
a first transceiver means in said base station and a second transceiver means in said portable station for wirelessly transmitting signals therebetween, said signal transmission between said first and second transceiver means including DTMF-encoded data signals and DTMF-encoded command signals and spoken command signals;

said directing station comprising
database means for storing product-related information and customer-related information, said database including order fulfillment information and product location information;
directing means for determining an order fulfillment path through said product storage space based upon order fulfillment information and product location information stored in said database means for said product storage space, said order fulfillment path including a sequence of person movement instructions for directing person movements between product storage locations in said product storage space for permitting an efficient assembly of products to fulfill a customer order, said directing means passing said person movement instructions to the

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first transceiver means for transmission to said second transceiver means of said portable station;

a processing means for facilitating transfer of data between said first transceiver means, said database means, and said directing means;

said base station comprising

voice recognition means for identifying spoken command signals received from said portable station and converting said spoken command signals into predetermined computer command codes corresponding to the spoken command signals, wherein said voice recognition means transfers said predetermined computer command codes to said directing station;

voice generation means for converting predetermined computer command codes received from said directing means into corresponding electronic sound signals for producing sounds corresponding to spoken commands, wherein said voice generation means transfers said electronic sound signals to said portable station;

a first translating means for translating DTMF-encoded transfer signals from said portable station into predetermined computer command codes, wherein said first translating means transfers said predetermined computer command codes to said directing station;

a computer command code database accessible by said first translating means and said voice generation means for providing predetermined computer command codes; and

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said portable station being adapted for use remotely from said base station, said portable station being movable about a product storage space, said portable station comprising:

scanning means for scanning bar code indicia on a product, said scanning means being adapted to produce digital data signals based upon the bar code indicia scanned;

a second translating means for converting digital data signals from said scanning means into DTMF-encoded transfer signals for transmitting to the first translating means of said base station;

a sound receiving means for receiving sounds and converting said sounds into electronic sound signals; and

a sound generating means for generating audible sounds from electronic sound signals.

2. The system of claim 1 wherein said portable station additionally comprises a portable interface device for linking the components of said portable station, said interface device comprising:

a first interface means interfaced to the second transceiver means and the second translating means of said portable station;

a second interface means interfaced to the sound receiving means and the sound generating means of said portable station;

a third interface means interfaced to the scanning means and the second translating means of said portable station;

a detection means connected to said first interface means for detecting DTMF-encoded signals received by said first interface means from said second transceiver means; and

an interrupting means connected to said first interface means for preventing DTMF-encoded signals from being transferred to said

sound generating means connected to said second interface means, said interrupting means being triggered by said detection means upon detection of DTMF-encoded signals.

3. The system of claim 1 wherein said first and second transceiver means comprise a wireless in-building communication apparatus.

4. The system of claim 1 wherein said scanning means comprises an optical scanner for optically scanning identification bar codes on products.

5. The system of claim 1 wherein said second translating means produces said DTMF-encoded transfer signals comprised of tones representing numeric and alphabetic components.

6. The system of claim 1 wherein said sound receiving means comprises a microphone positionable adjacent to the mouth of a person.

7. The system of claim 1 wherein said sound generating means comprises a speaker positionable adjacent to an ear of a person.

8. The system of claim 1 additionally comprising an input means for entering information for transfer to said base station, said input means generating DTMF-encoded transfer signals and transmitting said signals to said second transceiver means.

9. The system of claim 1 wherein, said input means comprising a numerical keypad incorporated with said scanning means.

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10. The system of claim 1 additionally comprising a power source
~~comprising a rechargeable battery.~~

11. The system of claim 1 wherein said portable station is adapted to be totable by a person.

12. The system of claim 1 additionally comprising a headset wearable on the head of a user, said headset including said speech receiving means and said speech generating means.

13. A portable interface device for interactive transfer of inventory information with a remotely-located base station having a first transceiver means, said portable interface device being for inclusion as a part of a portable station including a second transceiver means for wirelessly transmitting signals to and receiving signals from the first transceiver means, scanning means for scanning bar code indicia on a product and producing digital data signals based upon the bar code indicia scanned, a sound receiving means for receiving sounds and converting said sounds into electronic sound signals, and a sound generating means for generating audible sounds from electronic sound signals, said portable interface device comprising:
a first interface means for interfacing to a second transceiver means of a portable station;
a second interface means for interfacing to a sound receiving means of a portable station and a sound generating means of a portable station;
a third interface means for interfacing to a scanning means of a portable station; and
a translating means for converting digital data signals received from a scanning means interfaced to said third interface means, said

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~~Scanning means connected to said second transceiver means for translating means being adapted to convert said digital data signals into DTMF-encoded transfer signals and transmitting said transfer signals to the first interface means for transfer to a base station, said translating means converting DTMF-encoded transfer signals received by said first interface means from a second transceiver means, said translating means being adapted to convert said DTMF-encoded transfer signals into digital data signals for transfer to said scanning means.~~

14. The portable interface device of claim 13 additionally comprising a detection means connected to said first interface means for detecting DTMF-encoded signals received by said first interface means from said second transceiver means.

15. The portable interface device of claim 14 additionally comprising an interrupting means connected to said first interface means for preventing DTMF-encoded signals from being transferred to a sound generating means connected to said second interface means, said interrupting means being triggered by said detection means upon detection of DTMF-encoded signals.

16. A method of merchandise ordering and order fulfillment, said method comprising:
providing an order processing system comprising a central station interfaced to a telephone communication network so as be accessible to customers by telephone for creation of a merchandise order, said system further comprising a store station linked to said central station for receiving said merchandise order from said

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central station, said store station including a portable station movable by a user about a product storage space; identifying a customer account based upon a customer identification transmitted to the central station by a customer; selecting the merchandise order transfer characteristics for effecting the transfer to the customer of the product items of the merchandise order; and assembling a customer order for fulfillment, including the steps of requesting identification of product items to be added to the product order and the quantity of each identified product item.

17. The method of claim 16 wherein the step of determining additionally comprises, if an unfulfilled merchandise order is present on said database, providing a listing of product items of the unfulfilled merchandise order and inquiring whether the unfulfilled merchandise order is to be modified.

18. The method of claim 16 wherein said step of assembling a merchandise order includes the step of comparing the requested quantity of a product item in a customer order to a predetermined limit quantity established for said product item and, if the requested quantity exceeds said predetermined limit quantity, requesting confirmation of the requested quantity.

19. The method of claim 16 wherein said step of selecting the merchandise order transfer characteristics includes choosing between the options of delivery of the product items to the customer and pickup of

the product items by the customer, and picking the date and time of the transfer of the merchandise order

21. 20. The method of claim 16 wherein said assembling step includes the step of confirming the identity and quantity of the product item to be included in the customer order.

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21. The method of claim 16 wherein said fulfilling step includes the steps of requesting the identification of the product item picked from said product storage space and comparing the product item identified to the identity of the product item identity transmitted to said portable station.

17
22. The method of claim 16 additionally comprising the step of determining if the customer account has an unfulfilled merchandise order by checking an unfulfilled merchandise orders database.

23. The method of claim 16 additionally comprising the step of reciting a listing of any special offer product items.

24. The method of claim 16 additionally comprising the step of requesting and recording a payment method for the cost of the merchandise order.

25. The method of claim 16 additionally comprising the step of transmitting a record of the merchandise order to a store station for requesting payment for the merchandise order.

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26. The method of claim 16 additionally comprising the step of fulfilling the merchandise order from a product storage space of a store, including the steps of:

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compiling a listing of the product items of one or more merchandise orders to be assembled in a product storage space,

identifying the product locations in said product storage space of each of the product items on said listing of merchandise items,

determining a merchandise order fulfillment path through said product storage space, said order fulfillment path comprising a sequence of person movement instructions between the product locations of product items on said listing of merchandise items, and

transmitting one of said person movement instructions and a product item identity to said portable station in said product storage space for permitting a user of said portable station to locate a product item in said product storage station.

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21. A system for interactive transfer of inventory information in a product storage space, said product storage space having products arranged in at least two product rows with an aisle located between adjacent product rows, whereby one product row is located on the left side and another product row is located on the right side of a person moving down the length of an aisle, each said product row having a plurality of vertically spaced product shelves extending along the length of the row, the shelves of each aisle side having a number of product groupings thereon, each aisle being assigned an aisle value and each side of said aisle being assigned an aisle side value, and each product grouping being assigned a product grouping value, each product stored in said product storage space having a product location representable by an

aisle location value, an aisle side location value, and a product grouping location value, said product storage space comprising the interior of a retail grocery store, said system comprising:

a directing station, a base station and a portable station;

a first transceiver means in said base station and a second transceiver means in said portable station for wirelessly transmitting signals therebetween, said signal transmission between said first and second transceiver means including DTMF-encoded data signals and DTMF-encoded command signals and spoken command signals, said first and second transceiver means comprising a wireless telephone apparatus;

said directing station comprising

database means for storing product-related information and customer-related information, said product-related information comprising product identification information including an identification number with a Universal Product Code, product inventory information including the number of product items available in said product storage space and in auxiliary storage spaces, product pricing information including the price of products located in said product storage space, product location information including an aisle location value, an aisle side location value and a shelf location value for at least one product in at least one product storage space; said customer-related information comprising customer account information and customer order fulfillment information including a

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customer order product list and product substitution information;

directing means for determining an order fulfillment path through said product storage space based upon order fulfillment information and product location information stored in said database means for said product storage space, said order fulfillment path including a sequence of person movement instructions for directing person movements between product storage locations in said product storage space for permitting an efficient assembly of products to fulfill a customer order, said directing means passing said person movement instructions to the first transceiver means for transmission to said second transceiver means of said portable station;

a processing means for facilitating transfer of data between said first transceiver means, said database means, and said directing means;

said base station comprising

voice recognition means for identifying spoken command signals received from said portable station and converting said spoken command signals into predetermined computer command codes corresponding to the spoken command signals, wherein said voice recognition means transfers said predetermined computer command codes to said directing station;

voice generation means for converting predetermined computer command codes received from said directing means into corresponding electronic sound signals for producing

50

sounds corresponding to spoken commands, wherein said voice generation means transfers said electronic sound signals to said portable station;

a first translating means for translating DTMF-encoded transfer signals from said portable station into predetermined computer command codes, wherein said first translating means transfers said predetermined computer command codes to said directing station;

a computer command code database accessible by said first translating means and said voice generation means for providing predetermined computer command codes; and

said portable station being adapted for use remotely from said base station, said portable station being movable about a product storage space and being totable by a person, said portable station comprising:

scanning means for scanning bar code indicia on a product, said scanning means being adapted to produce digital data signals based upon the bar code indicia scanned, said scanning means comprising an optical scanner for optically scanning identification bar codes on products;

a second translating means for converting digital data signals from said scanning means into DTMF-encoded transfer signals for transmitting to the first translating means of said base station, said DTMF-encoded transfer signals being comprised of tones representing numeric and alphabetic components;

a sound receiving means for receiving sounds and converting said sounds into electronic sound signals, said sound

receiving means bo the mouth
of a person totting said portable station, said sound
receiving means comprising a microphone;
a sound generating means for generating audible sounds from
electronic sound signals, said sound generating means
being positionable adjacent to an ear of the person totting
said portable station, said sound generating means
comprising a speaker;
an input means for entering information for transfer to said base
station, said input means generating DTMF-encoded
signals, said input means comprising a numerical keypad;
and
a power source, said power source comprising a rechargeable
battery.

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